

## REMARKS

The Office Action dated December 30, 2009 has been received and considered. In this response, claims 12 and 14 have been amended. Support for the amendments can be found in the specification and figures as originally filed. Claims 1-11, 13, and 15-17 have been cancelled with out prejudice or disclaimer. Reconsideration of the outstanding rejections in the present application is respectfully requested based on the following remarks.

### **Obviousness Rejection of Claims 1-5, 9-13, and 15-17**

At section 28-30 of the Office Action, claim 12 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Begley (US 6,211,056) in view of Howard (US 6,396,122). Claim 12 has been amended to be an independent claim that includes limitations of its base claim, claim 1, from which it directly depended. The rejection of claim 12 is hereby respectfully traversed with amendment.

Claim 12 recites:

12. A method of producing an electrical circuit element comprising an elongate electrical conductor encircled by magnetic material extending along at least a part of said electrical conductor, the method comprising:  
forming at least a first sacrificial layer above and across said part of said electrical conductor;  
removing at least part of said first sacrificial layer to leave a space above and across said electrical conductor; introducing a fluid comprising magnetic nanoparticles dispersed in a liquid dispersant into said space, and  
removing said liquid dispersant leaving said magnetic nanoparticles densely packed in said space as at least part of said magnetic material, said magnetic material presents an easy axis of magnetisation extending along said electrical conductor.

In rejecting claim 12, the Examiner states that “Howard teaches iron particles (column 7 lines 45-55)” and that “[i]ron particles inherently have an easy axis of magnetization. . . .” Final Office Action, Sections 28-30. Applicant disagrees that the particles of Howard disclose “a magnetic material that presents an easy axis of magnetism” as recited at claim 12.

According to claim 12, the magnetic material having the easy axis of magnetism encircles said electrical conductor and is formed by leaving said magnetic nanoparticles [after removing said liquid]. Therefore, it is the magnetic material of claim 12 and not just an individual nanoparticle that has “an easy access of magnetism extending along said electrical conductor”. Even if, *arguendo*, the individual iron particles of Howard inherently each have an easy axis of magnetism, there is no disclosure at Howard that the iron particles collectively constitute a magnetic material that has an easy axis of magnetism, extending along an electrical conductor. Instead, Howard would merely disclose a plurality of iron particles -- each with its own easy axis of magnetism. Therefore, because Howard fails to disclose magnetic material encircling the electrical conductors and having an easy axis of magnetism along the electrical conductor as recited, withdrawal of the rejection of claim 12 under section 103 is respectfully requested.

#### **Obviousness Rejection of Claim 14**

At sections 62-67 of the Office Action, claim 14 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Begley in view of Howard as applied to claim 1 and further in view of Silverschotz (US 5,869,148). Claim 14 has been amended to be an independent claim that includes limitations of its base claim, claim 1, from which it directly depended. The rejection of claim 14 is hereby respectfully traversed with amendment.

Claim 14 recites:

14. A method of producing an electrical circuit element comprising an elongate electrical conductor encircled by magnetic material extending along at least a part of said electrical conductor, the method comprising:  
forming at least a first sacrificial layer above and across said part of said electrical conductor;  
removing at least part of said first sacrificial layer to leave a space above and across said electrical conductor; introducing a fluid comprising magnetic nanoparticles dispersed in a liquid dispersant into said space, and  
while applying a magnetic field, removing said liquid dispersant leaving said magnetic nanoparticles densely packed in said space as at least part of said magnetic material.

The Examiner rejects claim 14 as obvious over the combination of Begley in view of Howard and Silverschotz, and states that the feature of “while applying a magnetic field,

removing said liquid dispersant leaving said magnetic nanoparticles densely packed in said space as at least part of said magnetic material” is disclosed by Silvershotz. In particular, the Examiner states that “Silvershotz teaches applying a magnetic field to dispersed magnetic particles during the manufacture of magnetic product (column 5 lines 50-60)”, and “[i]t would have been obvious to one of ordinary skill in the art to apply a magnetic field to the particles during manufacture in order to cause the poles to align so that the magnetic fields will reinforce each other.” Final Office Action, Sections 62-67. Applicant respectfully disagrees.

In *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 127 S. Ct. 1727, 82 U.S.P.Q.2d 1385 (2007), the Supreme Court stated “[o]ften, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine **the known elements** in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit.” *Id.*, 127 S. Ct. at 1740-41 (emphasis added). Thus, under *KSR*, obviousness can only be established if it can be established that 1) **all of the elements of a claim were known**, and that 2) there was a **reason** to combine those elements. As set forth below, the Office fails to establish that all elements of claim 14 are disclosed by the relied upon references, and in particular that Silverschotz discloses “while applying a magnetic field, removing said liquid dispersant” as recited.

The portion of Silverschotz relied upon by the Office in rejecting claim 14 is reproduced below:

The magnetic domains within the individual crystal particles *embedded in the dried coating are unoriented* so that they do not reinforce each other in the crystal and therefore lack significant net bulk magnetic remanence. In order to align the magnetic domains within the crystals and impart magnetic remanence, the coating must be subjected to a strong magnetic field by imposing sufficiently high intensity electrically generated magnetic pulses or pulses generated by a permanent magnet. Alternatively, the magnetic field may be imposed by a permanent magnet of sufficient magnetic field strength. The preferred method of magnetization could be performed as shown in U.S. Pat. No. 4,379,276, which is directed to a process and apparatus for the multipolar magnetization of a material in strips.

Silverschotz, column 5, lines 50-63. (Emphasis added.)

Silverschotz nowhere discloses that the coating is subjected to a magnetic field at the same time that a liquid dispersant is being removed. Therefore, Silverschotz does not disclose “while applying a magnetic field, removing said liquid dispersant” as recited in claim 1, but instead discloses aligning magnetic domains of crystal particles that are embedding in a dry coating. Therefore, not all elements of claim 14 are disclosed by the relied upon references, and in particular the elements are not disclosed or rendered obvious by Silverschotz. For at least this reason, claim 14 is necessarily non-obvious over the relied upon references.

### **Conclusion**

The Applicants respectfully submit that the present application is in condition for allowance, and an early indication of the same is courteously solicited. The Examiner is respectfully requested to contact the undersigned by telephone at the below listed telephone number in order to expedite resolution of any issues and to expedite passage of the present application to issue, if any comments, questions, or suggestions arise in connection with the present application.

The Commissioner is hereby authorized to charge any fees that may be required, or credit any overpayment, to Deposit Account Number 50-3797.

Respectfully submitted,

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Date